AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claims 1-134 (Canceled)

135. (Currently Amended) A home video game system, for use with a television type monitor display device, comprising:

a game program processing unit for executing at least a portion of a videographics program that includes instructions for drawing one or more polygons for constructing and displaying 3D graphic objects;

a video RAM for providing video frame data to a display device; and

a programmable special purpose hardware graphics processor unit connected to the game program processing unit for receiving information relating to one or more polygons for constructing and displaying 3D graphic objects, the special purpose hardware graphics processor programmed to process pixel data for subsequent transfer to said video RAM corresponding to one or more portions of polygon-based 3D objects to be displayed, wherein said special purpose hardware graphics processor unit performs high speed 3D spatial coordinate transformation computations utilizing a 3x3 transformation matrix ~~transformation of x, y and z graphics data points to provide~~ for computing new x, y and z spatial coordinates of polygon graphics data points to enable displaying of rotated and/or scaled polygon-based 3D objects at high speed and performs writing of polygon pixel data to the video RAM .

136. (Previously Presented) A home video game system as in claim 135 wherein the graphics processor is a coprocessor that is responsive to specific instructions used for rendering 3D objects.

137. (Previously Presented) A home video game system as in claim 135 wherein the graphics processor is a pipelined processor.

138. (Previously Presented) A home video game system as in claim 135 wherein the transfer of pixel data to video RAM is a direct memory access (DMA) type transfer.

139. (Previously Presented) A home video game system as in claim 135 wherein the graphics processor includes a high speed multiplier circuit.

140. (Previously Presented) A home video game system as in claim 135 wherein the graphics processor includes embedded RAM cache memory.

141. (Canceled)

142. (Previously Presented) A home video game system as in claim 135 wherein the graphics processor includes at least an Arithmetic Logic Unit and a multiplier circuit for performing computations for rotation and/or scaling of a graphic object to be displayed.

143. (Previously Presented) A home video game system as set forth in claim 142 wherein the multiplier performs multiply operations using at least 16-bit length operands.

144. (Currently amended) A home video game system as in claim 135 wherein the graphics processor is programmed to ~~rotate an array of~~ multiply an array of x, y and z spatial coordinate data points corresponding to polygon vertex points by a 3x3 coordinate transformation matrix to cause a rotation and/or scaling of at least a portion of a displayed 3D graphics object.

145. (Previously Presented) A home video game system as in claim 135 wherein two or more 3D graphic objects are displayed simultaneously.

146. (Previously Presented) A home video game system as in claim 135 wherein the graphics processor is programmed to perform texture mapping operations.

147. (Previously Presented) A home video game system as in claim 135 wherein the graphics processor includes a pixel plotting circuit for converting display screen pixel coordinate addresses to a character map address format.

148. (Previously Presented) A home video game system as in claim 135 having a set of instructions for programming the graphics processor unit for rendering 3D graphic objects wherein the instruction set includes an instruction for controlling transparency of a displayed object.

149. (Currently amended) A home video game system as in claim 135 having a set of instructions for programming the graphics processor unit wherein the instruction set includes a fractional signed multiply instruction ~~for~~ useful in computing gradients and/or slopes for rotating displayed 3D graphic objects.

150. (Currently amended) A home video game system as in claim 135 wherein the graphics processor incorporates at least an Arithmetic Logic Unit and cache RAM and is fabricated on a single chip.

151. (Currently amended) A home video game system as in claim 135 wherein the graphics processor incorporates at least an Arithmetic Logic Unit and a high speed multiplier circuit and is fabricated on a single chip.

152. (Currently amended) A home video game system as in claim 135 wherein the graphics processor comprises an Arithmetic Logic Unit, a multiplier unit and plurality of registers and is fabricated on a single chip.

153. (Previously Presented) A home video game system as in claim 135 further comprising a CD ROM reader device wherein at least a portion of program instructions and/or graphics data is accessed from a CD ROM.

Claims 154-185 (canceled)

186. (Currently amended) In a home video game system for use with a television type monitor, said home video game system including a game program processor for executing at least a portion of a video graphics program that includes instructions for constructing and displaying polygon-based 3D objects, a programmable special purpose hardware graphics processor and a video RAM for providing video frame data to a television type monitor display device, a method for performing operations for rotation and/or scaling of polygon-based 3D graphic objects to be displayed on the display device, comprising the steps of:

executing instructions of a video graphics program for constructing and displaying 3D graphic objects[[;]], including:

providing instructions to said special purpose hardware graphics processor for performing ~~a 3x3 matrix transformation of x, y and z graphics data to compute rotated and/or scaled 3D coordinate polygon vertex position information for a 3D graphic object at high speed~~ high speed 3D spatial coordinate transformation computations utilizing a 3x3 transformation matrix for computing new x, y and z spatial coordinates of polygon graphics data points to enable rotating and/or scaling of a polygon-based 3D object at high speed;

computing display screen position coordinates for a rotated and/or scaled 3D graphic object; and

writing polygon pixel data including pixel color information corresponding to the rotated and/or scaled 3D graphic object to the video RAM.

187. (Currently amended) A home video game system for use with a television type monitor display device, comprising:

a game program processor including a video RAM;

a separate special purpose hardware graphics processor for constructing one or more portions of a 3D graphic object for displaying on the display device, ~~wherein~~ said special purpose hardware graphics processor ~~performs one or more matrix transformations of x, y and z graphics coordinate data to provide rotated and scaled polygon-based 3D objects at high speed~~ capable of performing both writing of polygon pixel data to said video RAM and high speed computations of 3D spatial coordinate transformations for displaying rotated and/or scaled polygon-based 3D objects, wherein said graphics processor uses a 3x3 transformation matrix for determining new x, y and z spatial coordinates of polygon graphics data points of a predetermined 3D graphic object to enable rotating and/or scaling of a polygon-based 3D object ; and

~~a CD-ROM~~ an optical disk reader device, wherein at least a portion of program instructions and/or graphics data used in rendering a ~~trapezoid-based~~ polygon-based 3D graphic object is accessed from ~~a CD-ROM~~ an optical disk.

188. (Previously Presented) A home video game system as in claim 187 wherein the graphics processor is a coprocessor that is responsive to specific instructions used for rendering 3D objects.

189. (Previously Presented) A home video game system as in claim 187 wherein the graphics processor is a pipelined processor.

190. (Previously Presented) A home video game system as in claim 187 wherein the graphics processor includes a high speed multiplier circuit.

191. (Previously Presented) A home video game system as in claim 187 wherein the graphics processor includes a plurality of data storage registers.

Claims 192-194 (Canceled)

195. (Currently Amended) A home video game system as in claim 187 wherein the x, y and z spatial coordinate data correspond to vertex points of a polygon-based 3D graphics object.

196. (Previously Presented) A home video game system as in claim 187 wherein two or more 3D graphic objects are displayed simultaneously.

197. (Previously Presented) A home video game system as in claim 187 wherein the graphics processor is programmed to perform texture mapping operations.

198. (Previously Presented) A home video game system as in claim 187 wherein the graphics processor includes a pixel plotting circuit for converting display screen pixel coordinate addresses to a character map address format.

199. (Previously Presented) A home video game system as in claim 187 having a set of instructions for programming the graphics processor unit for rendering 3D objects wherein the instruction set includes an instruction for controlling transparency of a displayed object.

200. (Previously Presented) A home video game system as in claim 187 having a set of instructions for programming the graphics processor unit wherein the instruction set includes a fractional signed multiply instruction for computing gradients and/or slopes for rotating polygon-based displayed objects.

201. (Currently amended) A home video game system as in claim 187 wherein the graphics processor incorporates at least an Arithmetic Logic Unit and cache RAM and is fabricated on a single chip.

Claims 202 -203 (Canceled)

204. (Currently Amended) In a home video game system used with a television type monitor, the game system having a game program processor and a programmable special purpose hardware graphics processor, the graphics processor having circuitry including a plurality of storage registers for increasing computational speed when processing x, y and z spatial coordinates for 3D graphic data ~~matrix~~ transformation matrix operations, a method of producing 3D type graphics display effects utilizing rotated and/or scaled polygon-based objects, comprising the steps of:

executing instructions for drawing one or more polygons for constructing and displaying polygon-based objects;

using a plurality of storage registers of the special purpose hardware graphics processor as a ~~rotation~~ 3x3 spatial coordinate transformation matrix for computing ~~3x3 matrix~~ 3D spatial coordinate transformations of x, y and z spatial coordinate graphic data ~~corresponding to one or more vertices of polygon-based graphic objects~~;

providing said graphics processor with x, y and z spatial coordinate graphic data ~~vertex coordinate information relating at least in part to~~ corresponding to at least one vertex of a polygon-based 3D graphic object a polygon-based 3D graphic object;

computing new x, y and z ~~graphic~~ spatial coordinate data ~~coordinate~~ values ~~corresponding to~~ for one or more predetermined vertices of said 3D graphic object using said plurality of storage registers as a 3x3 spatial coordinate transformation matrix to enable displaying of a rotated and/or scaled 3D graphic object ~~using said rotation matrix~~; and

writing pixel color information corresponding to the rotated polygon-based 3D object into a video display RAM,

wherein said graphics processor performs both the writing of polygon pixel data to said video RAM and high speed computations of 3D spatial coordinate transformations using said 3x3 transformation matrix for displaying rotated and/or scaled polygon-based 3D objects.

205. (Previously Presented) The method as in claim 204 wherein the writing of pixel information is accomplished via a DMA operation.

Claims 206-223 (canceled)